(12) UK Patent Application (19) GB (11) 2 287 411 (13) A

(43) Date of A Publication 20.09.1995

(21) Application No 9504188.5

(22) Date of Filing 02.03.1995

(30) Priority Data
(31) PM4197 (32) 02.03.1994 (33) AU

(71) Applicant(s)
Alan David Baldwin
53 Melrose Avenue, Sylvania,
New South Wales 2224, Australia

(72) Inventor(s)
Alan David Baldwin

(74) Agent and/or Address for Service
Urquhart-Dykes & Lord
Alexandra House, 1 Alexandra Road, SWANSEA,
SA1 5ED, United Kingdom

(51) INT CL[6]
A63B 69/00

(52) UK CL (Edition N)
A6D D13C

(56) Documents Cited
GB 2052272 A GB 2031737 A GB 1434936 A

(58) Field of Search
UK CL (Edition N) A6D D13C , A6M MBL
INT CL[6] A63B 69/00 69/34
Online databases:-WPI

(54) **Scrum machine**

(57) A scrum machine has a thrust receiving bar 15 for receiving thrust from a scrum and means for indicating the difference in thrust applied between the two sides of the scrum. The thrust bar 15 is mounted on a support bar 16 so as to allow the thrust bar to pivot at 17 in a horizontal plane. The support bar 16 is mounted to allow both forward movement and limited pivoting in a vertical plane, to indicate departure of the applied force from the horizontal.

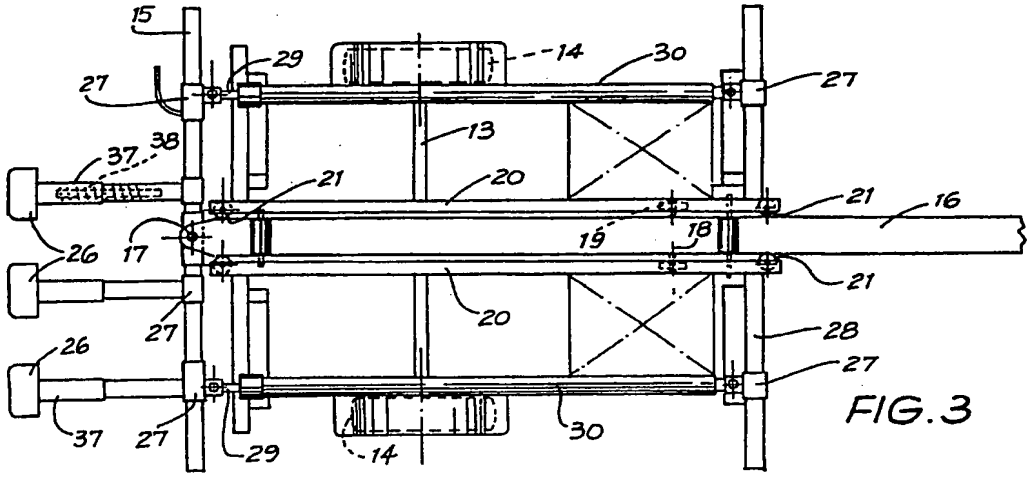


FIG.3

GB 2 287 411 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

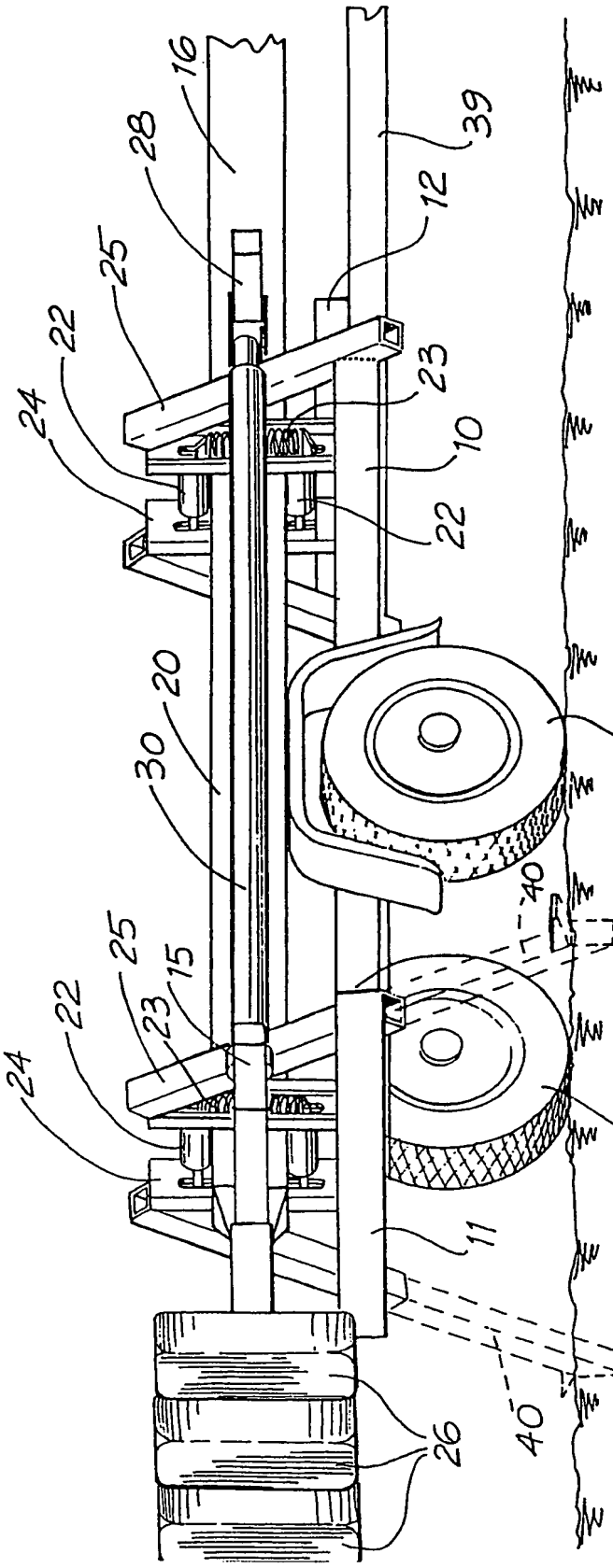


FIG. 1

FIG. 2

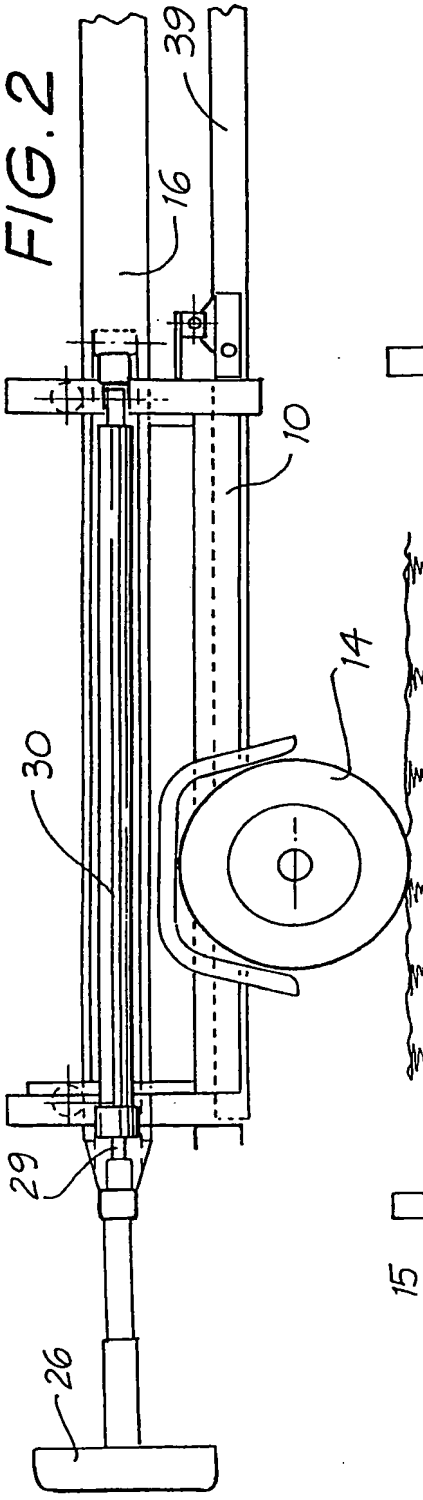
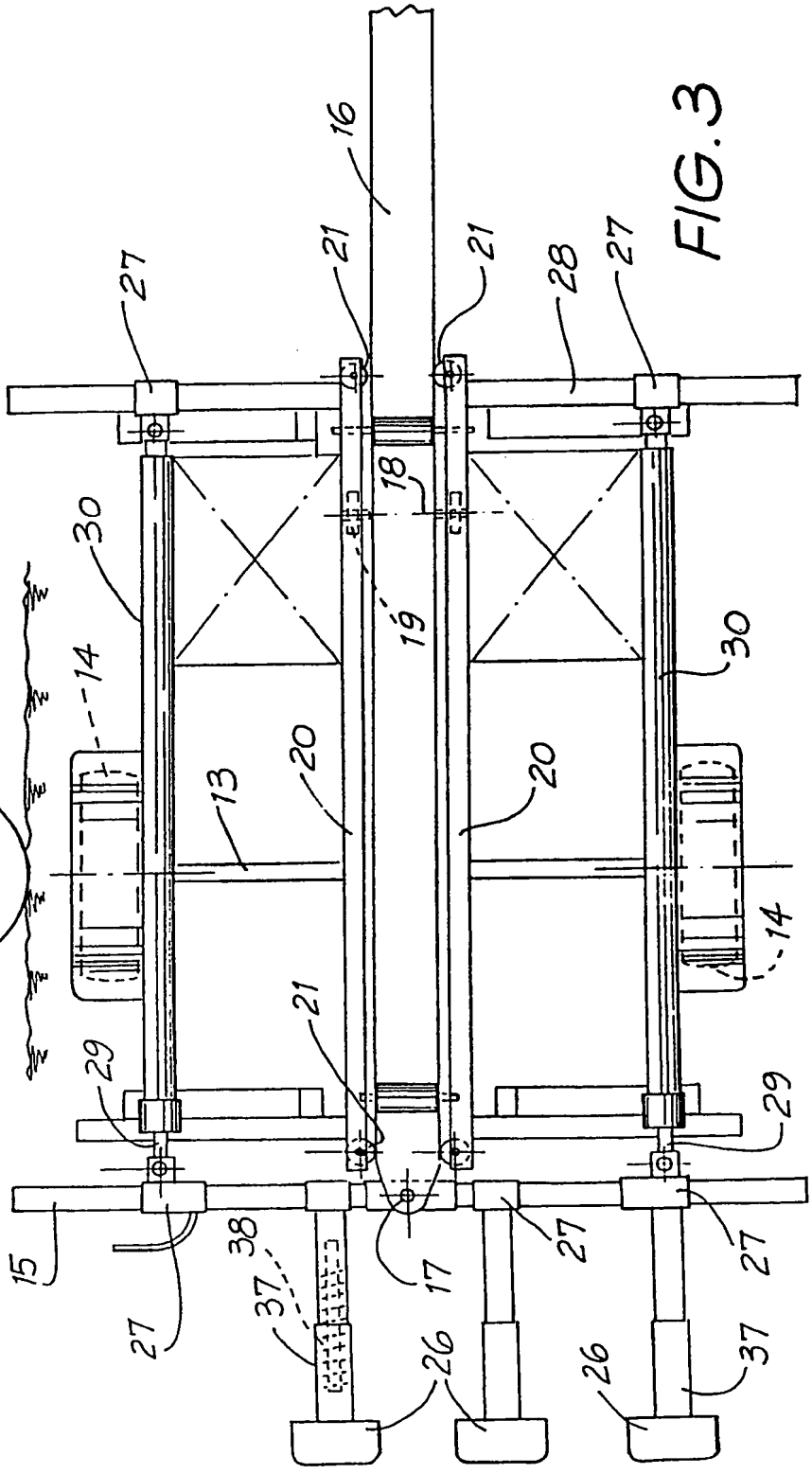

39
16
10
14
30
29
26

FIG. 3


16
27
21
21
28
27
18
30
19
14
30
20
13
20
14
21
29
29
15
38
37
17
27
27
27
27
37
26
26
26
37

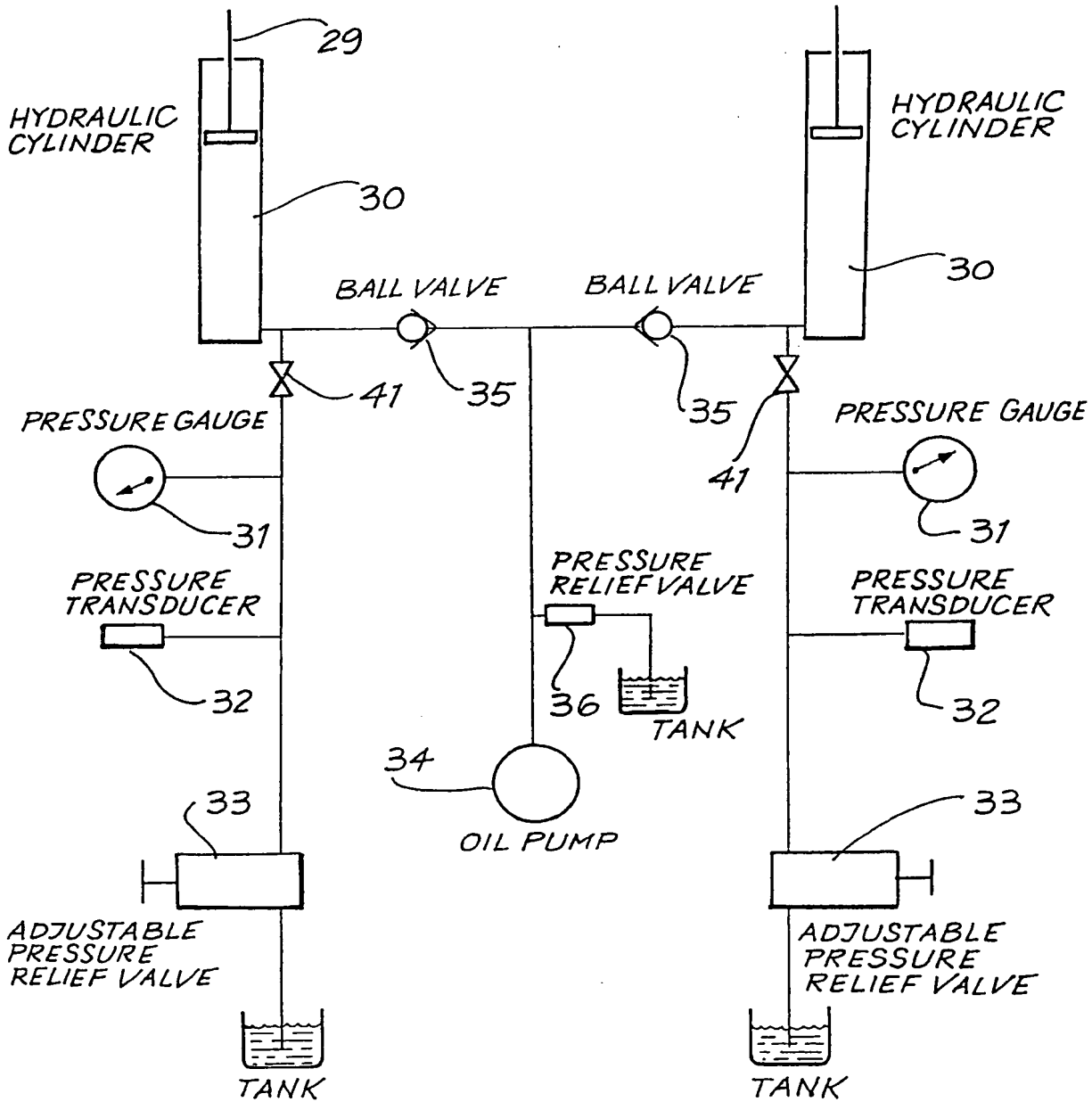

29
HYDRAULIC CYLINDER
30
BALL VALVE
BALL VALVE
HYDRAULIC CYLINDER
30
41
35
35
41
PRESSURE GAUGE
PRESSURE GAUGE
31
31
PRESSURE TRANSDUCER
PRESSURE RELIEF VALVE
PRESSURE TRANSDUCER
32
36
32
TANK
34
OIL PUMP
33
33
ADJUSTABLE PRESSURE RELIEF VALVE
ADJUSTABLE PRESSURE RELIEF VALVE
TANK
TANK

FIG. 4

2287411

SCRUM MACHINE

This invention relates to scrum machines. An object of the invention is to provide a machine which will provide more information about the manner in which the pack applies force to the machine, than is available from scrum machines known in the prior art.

In one form, the invention provides a scrum machine having thrust receiving means for receiving a forward thrust from a scrum and means for indicating the difference in the thrust applied between two sides of the scrum.

Preferred forms of the machine enable the measurement and recording of differences in force between the two sides of the scrum, and provide an indication of the departure of the applied force from the horizontal.

To assist in explaining the features of the invention, a presently preferred embodiment is illustrated in the accompanying drawings by way of example only, in which:

Fig. 1 is an oblique side elevation of a scrum machine according to the invention;

Fig. 2 is a side elevation of the machine illustrated in Fig. 1;

Fig. 3 is a plan view of the machine, and

Fig. 4 is a schematic of the hydraulic circuit employed in the machine.

The illustrated machine comprises a frame made up of

side frame members 10 and front and rear cross-members 11 and 12. In the form illustrated, the frame is supported on an axle 13 and wheels 14 for transport, but the machine may of course be permanently affixed to a supporting surface or supported in any other convenient manner.

At the forward end of the machine a scrum thrust receiving bar 15 is provided, supported in the manner now described. The thrust bar 15 is attached to the forward end of a support bar 16 by means of a vertical pin 17 which allows the thrust bar 15 to pivot in the horizontal plane.

The support bar 16 is mounted on an axle 18 which in turn is supported on wheels 19 which run on the lower flanges of a pair of opposed guide channels 20. The support bar 16 is located laterally by pairs of vertical rollers 21 at the respective ends of the channels 20, and vertical movement, in which the support bar pivots about the axle 18, is limited by upper and lower horizontal rollers 22 the axles of which are mounted between opposed pairs of vertical springs 23, mounted in posts 24 on which in turn the guide channels 20 are mounted. The posts 24 are braced by oblique frame members 25 which extend from the frame side members 10.

As a consequence of this arrangement, the support bar 16 is capable of movement along its longitudinal axis and limited pivoting movement in a vertical plane about the axle 18. Thus the thrust member 15 is constrained by the support bar in its movement, and may therefore move in the longitudinal direction of the support bar, may pivot in a horizontal plane about the pin 17, and may move up and down to a limited extent against the springs 23. Pivoting of the

support bar 16, detectable by visual observation, will indicate departure from the horizontal of the force applied by the scrum.

Shoulder pads 26 are supported on the thrust bar 15 by collars 27 the position of which on the thrust bar may be adjusted to suit the size of the scrum. Only three pads need be provided, as the loosehead prop will apply thrust only with the shoulder nearer the hooker. Hence, the centre of the scrum will align with the pivot 17 between the support bar 16 and the thrust receiving bar 15. Four pads can be used if required.

Between the thrust bar 15 and a rear cross bar 28 are mounted two hydraulic rams 29, by means of similar collars 27. These rams function to extend the thrust bar 15 to its starting position for scrum training, and to resist the push of the scrum on the thrust bar 15. The hydraulic circuit in which the rams are connected is shown in Fig.4. Each hydraulic cylinder 30 is provided with a pressure gauge 31 and a pressure transducer 32, the latter providing an electrical output to enable the storage and analysis (for example by means of a computer) of the forces applied to each ram during a training session. An adjustable pressure relief valve 33 completes the hydraulic circuit of the individual cylinders.

To move the rams 29 to their extended position prior to use, fluid is supplied by a pump 34 via non-return valves 35. Control valves 41, situated in the hydraulic lines between cylinders 30 and pressure guages 31, are closed while the rams are being reset. This prevents release of pressure through relief valves 33 which might otherwise occur if the adjustable valves 33 are set to release at a low pressure, for example for use with junior teams. In

an important feature of the machine, the supply circuit is provided with a pressure relief valve 36, which is set so as to prevent the return cycle of the rams from being used to push against the scrum, to avoid the risk of injury to the players.

The shoulder pads 26 are mounted on telescopic supports 37, which incorporate hydraulic dampers 38 centred by a pair of apposed springs 39. This combination of springs and dampers serves to cushion the initial shock of impact with the shoulder pads, but the rapid take-up of the compressed spring of each pair 39 ensures that the pressure gauges and transducers respond to the initial impact of the scrum as well as to the continuing force applied by the scrum.

Where the machine is in the transportable form illustrated, in may be fixed in place during use by means of ground-contacting legs 40 which telescope within the forward oblique frame members 25, while the rear of the machine is held by the attachment of the draw bar 39 to the towing vehicle.

Height adjustment of the shoulder pads may be achieved by adjustment of the height of the channels 20 supporting the support bar 16, for example by means of a vertical screw (not shown). The rear support of the channels 20 is also provided with vertical adjustment to enable to the bar 16 to be levelled after the height of the shoulder pads 26 has been set.

It will be appreciated that the details of the illustrated embodiment, and the particular engineering solutions to the principles of operation which have been described, may be varied, and the inventive ideas disclosed herein may be embodied in many other forms.

CLAIMS

1. A scrum machine having thrust receiving means for receiving a forward thrust from a scrum and means for indicating the difference in the thrust applied between two sides of the scrum.

2. A scrum machine according to claim 1 wherein the thrust receiving means includes a tranversely extending thrust receiving member.

3. A scrum machine according to claim 2 wherein the thrust receiving member is mounted to allow pivoting in a horizontal plane.

4. A scrum machine according to claim 3 wherein the thrust receiving member pivots about a pivot point located forward of the centre of the scrum.

5. A scrum machine according to claim 4 including means for measuring the thrust applied to the thrust receiving member on both sides of the pivot point.

6. A scrum machine according to any preceding claim, further including means indicating departure from the horizontal of the thrust applied by the scrum.

7. A scrum machine according to claim 6 wherein the thrust receiving member is supported by a forwardly extending support member which is mounted to allow pivoting in a vertical plane.

8. A scrum machine according to claim 7 wherein the support member is mounted to slide forward relative to a frame of the machine upon application of thrust by the scrum.

9. A scrum machine according to claim 7 or 8 wherein the thrust receiving means includes a tranversely extending bar pivoted to a rear end of the support member.

10. A scrum machine according to claim 7 wherein the height of the support member and thrust receiving means is adjustable.

11. A scrum machine substantially as herein described with reference to the accompanying drawings.

Application No: GB 9504188.5 **Examiner:** David Whitfield
Claims searched: 1-11 **Date of search:** 10 April 1995

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.N): A6D D13C A6M MBL

Int Cl (Ed.6): A63B 69/00 A63B 69/34

Other: Online databases:- WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB2052272A	(MOORE) WHOLE DOCUMENT	1-6, 8
"	GB2031737A	(SHEPPARD) " "	1-6
"	GB1434936	(MOORE) " "	1-6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.